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(54) **Automatic air freshener**

(57) An automatic air freshener comprises a casing provided with air inlet and outlet apertures, and having an electric fan mounted adjacent the outlet. A source of fragrance is retained within the casing and a timer controls the operation of the fan in a cyclic manner such that fragrance is allowed to accumulate within the casing for a first period while the fan is switched off, whereafter the fan operates for a second period before switching off again. The source of fragrance may be an impregnated pellet or a pad of absorbent material, and the timer may be electromechanical or electronic.

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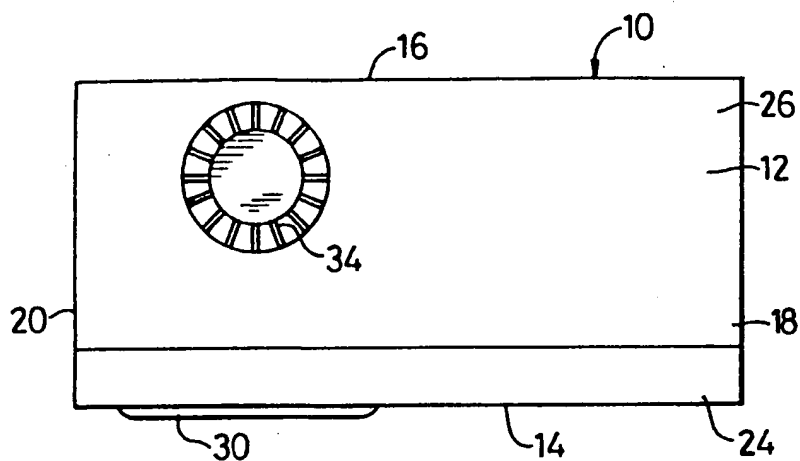


Fig. 1

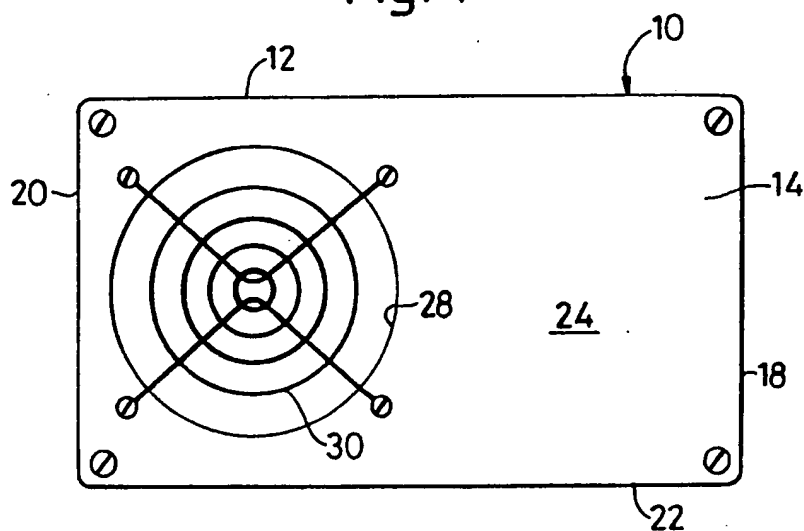


Fig. 2

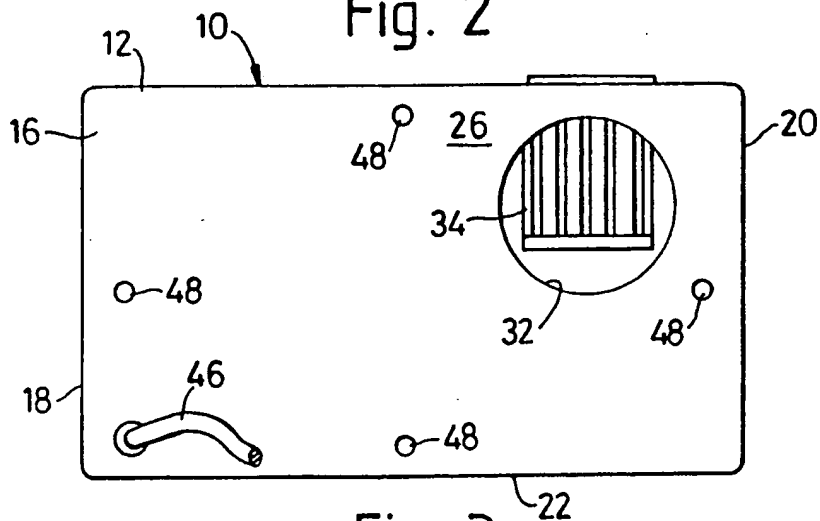


Fig. 3

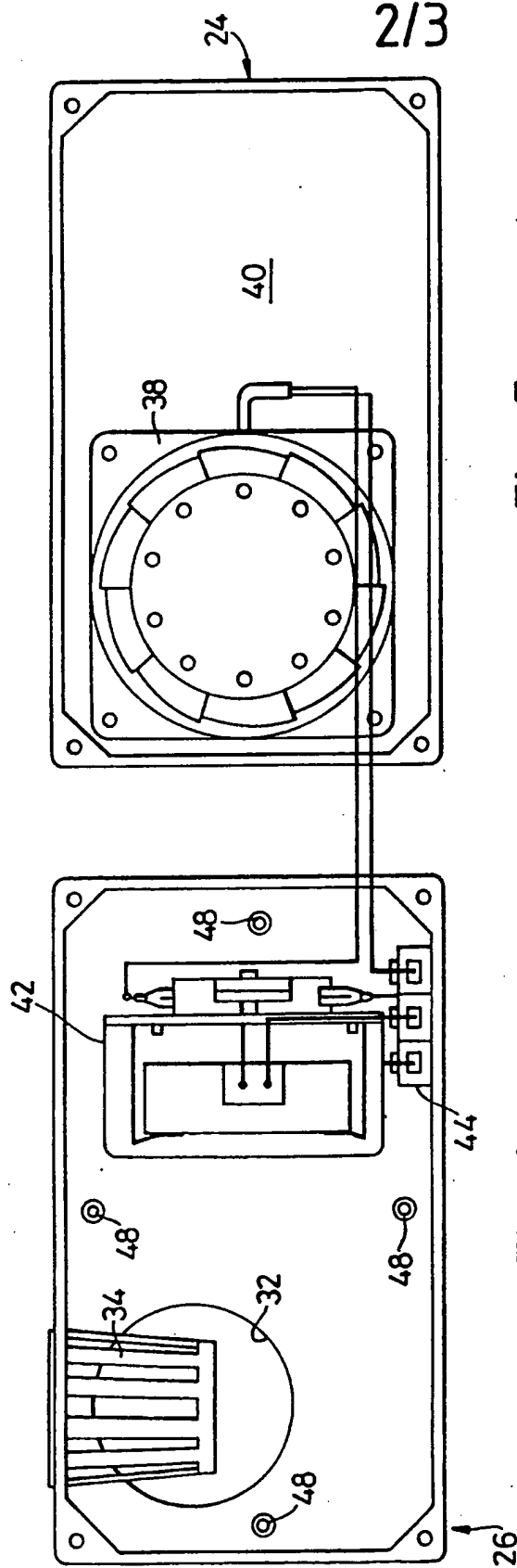


Fig. 5

Fig. 4

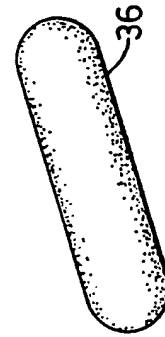


Fig. 6

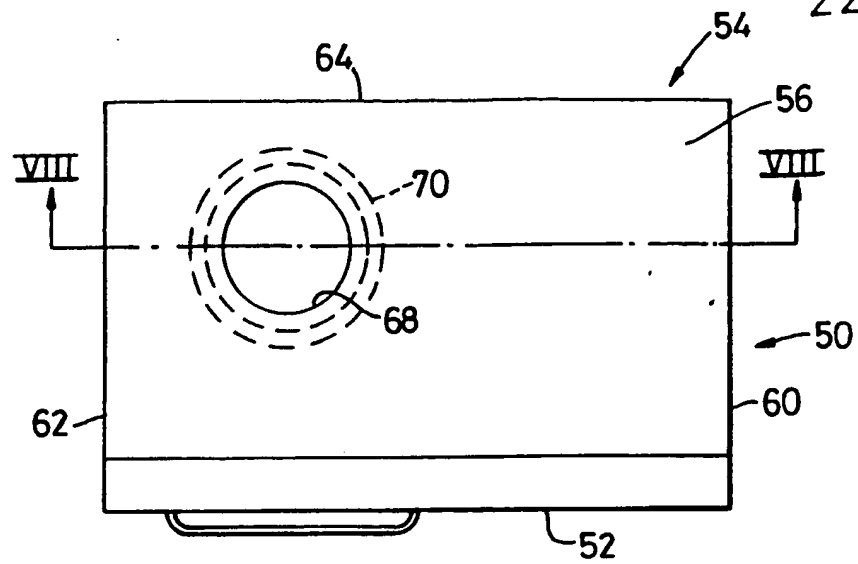


Fig. 7

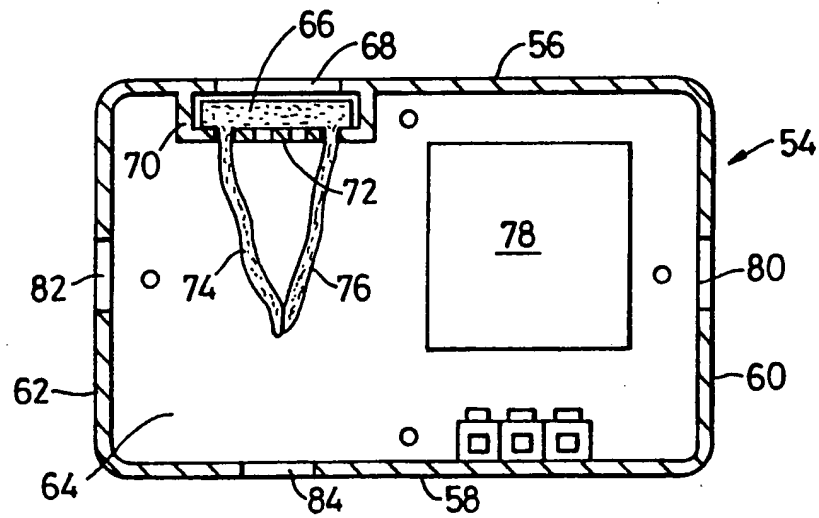


Fig. 8

AUTOMATIC AIR FRESHENER

The present invention relates to an air freshener of the type adapted to disseminate a fragrance into the atmosphere of a room or the like, and is particularly concerned with an electrically powered device which operates automatically at periodic time intervals.

A number of air freshener and/or cleaner devices exist, including spray (atomiser or aerosol) devices, and fan type devices incorporating impregnated filter pads, fragrance pellets etc. Such devices are generally bulky and complex in construction, and normally operate either continuously, or by periodic manual actuation. Devices powered by mains electricity might be adapted to be switched on automatically by the use of an external timer device, however this obviously adds to the expense of the basic unit and does not provide fully automatic cyclic operation. Furthermore, it is generally the case that such devices have to be dismantled to allow the source of fragrance to be replenishable.

It is an object of the present invention to obviate or mitigate the aforesaid disadvantages, and to provide a simple, compact, self-contained device which is automatic in operation. It is a further object to provide a device wherein the source of fragrance is readily replenishable.

Accordingly, the invention provides an air freshening device comprising an outer casing defining a closed chamber and having an inlet and an outlet, means for receiving a source of fragrance within said chamber, an electrically powered fan adapted to draw air into said chamber via said inlet and to expel air, together with fragrance from said source, from said chamber via said outlet, and cyclic timing means adapted to control the power supply to said fan such that the fan is inoperative for a first period during which fragrance from said source accumulates within said chamber, and subsequently operates for a second period during which air and fragrance are expelled from said chamber into the external atmosphere.

Preferably, said source of fragrance is a fragrance pellet which is received in an open frame or mesh receptacle extending downwardly into said chamber through a top surface of said casing.

In a preferred embodiment, said source of fragrance comprises a pad of absorbent material retained adjacent a top surface of said casing.

Preferably also, said pad is provided with a wick portion extending downwardly into the interior of said casing.

Preferably also, said source of fragrance is accessible via an aperture formed in said top surface of said casing.

Preferably also, said outlet comprises an aperture formed in a front face of said casing, the fan being mounted inside said casing adjacent said aperture.

Said inlet may comprise an aperture formed in a rear surface of said casing substantially opposite said outlet aperture.

Alternatively, said inlet comprises at least one aperture formed in at least one side wall of said casing.

The timing means may comprise an electrically operated, adjustable cam timer, or an electronic timer.

Embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Fig. 1 is a plan view of a device embodying the invention;

Fig. 2 is a front view of the device of Fig. 1;

Fig. 3 is a rear view of the device of Fig. 1;

Fig. 4 is a front view of the device of Fig. 1 with a cover member removed;

Fig. 5 is a rear view of the front cover member when removed from the device of Fig. 1;

Fig. 6 shows a standard fragrance pellet suitable for use in the device of Figs. 1 to 5;

Fig. 7 is a plan view of a second embodiment of the invention; and

Fig. 8 is a sectional view on line VIII-VIII of Fig. 7.

16. When the cover member 24 and box portion 26 are assembled, the fan 32 is disposed between the receptacle 34 and outlet 28. The casing 10 may be provided with any suitable screw apertures (such as 48) to allow wall mounting or the like.

The operation of the device is as follows: with a fragrance pellet 36 located in the receptacle 34, the timer 42 controls the power supply 42 to the fan 38, which thus operates automatically in a cyclic fashion. The fan 38 remains inoperative for a first predetermined period (eg 30 minutes) during which fragrance from the pellet 36 accumulates inside the casing 10. Thereafter, the timer 42 switches on the fan 38 for a second predetermined period (eg 3 minutes), during which air drawn in through the inlet 32, together with the accumulated fragrance is expelled, through the outlet 28 to the external atmosphere. This cycle repeats so long as the device is connected to the mains supply.

Since the pellet 36 which provides the source of fragrance for the device is simply inserted into the receptacle 34 (which may be open to the atmosphere at the top - as shown - or which might be provided with a simple cap), it is easily replaced when exhausted, with no need to dismantle the casing 10. The device itself may be constructed from readily available components to provide a simple, neat and compact unit which is highly reliable and fully automatic in operation. Using an 80mm diameter fan, a typical cam timer, and a standard fragrance pellet - 2 inches (5.08 cm) long by 1/2 inch (1.27 cm) in diameter - typical dimensions for the casing 10 might be 175 mm by 110 mm by 90 mm.

Figs. 7 and 8 show an alternative, preferred embodiment of the invention, having a casing 50, similar to that of the previous embodiment, comprising a front cover 52 and a box portion 54. The top, bottom, first and second side, and rear walls of the box portion 52 are designated 56, 58, 60, 62 and 64 respectively.

Referring now to the drawings, Figs. 1 to 3 show an air freshening device, comprising a generally rectangular casing 10 (suitably of moulded thermoplastic material) having a top face 12, a front face 14, a rear face 16, first and second end faces 18, 20 and a bottom face 22. The casing 10 thus defines a closed chamber and may suitably include a front cover member 24 and a rear, box-shaped portion 26 fastened to one another by means of screws or the like.

Formed in the front face 14 adjacent one end thereof is a circular outlet aperture 28, which may be provided with a finger guard or grille 30. A relatively smaller inlet aperture 32 is formed in the rear face 16 substantially opposite the outlet 28. A further aperture is formed in the top face 12, adjacent the rearmost edge thereof, in which there is located a receptacle 34 which extends downwardly into the interior of the casing 10 between the inlet 32 and outlet 28. In this example the receptacle 34 is in the form of a plastics basket, but might suitably comprise any type of open frame or mesh which allows the interior of the receptacle 34 to communicate with the interior of the casing 10. In use, the receptacle 34 contains a solid fragrance pellet 36 (see Fig. 6).

Turning to Figs. 4 and 5, the interior of the casing 10 contains an electric fan 38 affixed to the inner surface 40 of the front face 14 of the cover member 24, concentrically with the outlet aperture 28, and a cyclic timer assembly 42 mounted within the box portion 26 to one side of the inlet aperture 32. The timer 42 is of the cam type wherein a synchronous motor drives one or more cams which operate micro-switches. Such timers (which are well known and will not be described in detail herein) are reliable and relatively cheap, and may be adjusted to suit particular time/cycle requirements.

A connector block 44 provides connections for the mains supply to the motor of the timer 42 and, via the micro-switches of the timer 42, to the fan 38. In the example shown the chassis of the fan is earthed, and the power supply cable 46 is led out through a hole in the rear face

In this embodiment, the pellet 36, Fig. 6 is replaced by a pad 66 of absorbent material located beneath a circular aperture 68 formed in the top surface 56 of the box portion and retained within a circular enclosure comprising a circular side wall 70, extending downwardly into the interior of the box portion 54 from the inside of the top surface 56 and concentric with aperture 68, and a bottom wall constituted by a grill 72.

Strips 74 and 76 of the material of the pad 66 extend downwardly through the grill 72, and the ends thereof are stuck together to form a generally V-shaped "wick" hanging down behind the fan (not shown) mounted on the inside of the front cover 52 (the arrangement thereof being substantially identical to the previous embodiment). In use, the absorbent pad is moistened with drops of liquid fragrance, via the aperture 68. The wick assists in transferring the fragrance to the atmosphere inside the casing, and the fragrance is easily replenished by the application of liquid to the pad 66.

Further differences between this and the previous embodiment are as follow:

a) The cam timer 42 is replaced by electronic timing means mounted on a printed circuit board 78. The electronic timer is constructed/programmed to operate in the same cyclic manner as the cam timer 42.

b) The inlet apertures 80 and 82 in this embodiment are located in the side walls 60 and 62 of the casing rather than in the rear wall. This arrangement is preferable particularly if the device is to be wall-mounted.

c) An additional aperture 84 is located directly below the wick so that if the pad 66 is over-saturated with liquid the excess will drip out of the casing and will not collect in the interior thereof.

This second embodiment is preferred for reasons of simplicity and economy of manufacture and ease of use.

Claims

1. An air freshening device comprising an outer casing defining a closed chamber and having an inlet and an outlet, means for receiving a source of fragrance within said chamber, an electrically powered fan adapted to draw air into said chamber via said inlet and to expel air, together with fragrance from said source, from said chamber via said outlet, and cyclic timing means adapted to control the power supply to said fan such that the fan is inoperative for a first period during which fragrance from said source accumulates within said chamber, and subsequently operates for a second period during which air and fragrance are expelled from said chamber into the external atmosphere.
2. The device of claim 1, wherein said source of fragrance is a fragrance pellet which is received in an open frame or mesh receptacle extending downwardly into said chamber through a top surface of said casing.
3. The device of claim 1, wherein said source of fragrance comprises a pad of absorbent material retained adjacent a top surface of said casing.
4. The device of claim 3, wherein said pad is provided with a wick portion extending downwardly into the interior of said casing.
5. The device of any of claims 2 to 4, wherein said source of fragrance is accessible via an aperture formed in said top surface of said casing.
6. The device of any preceding claim, wherein said outlet comprises an aperture formed in a front face of said casing, the fan being mounted inside said casing adjacent said aperture.
7. The device of claim 6, wherein said inlet comprises an aperture formed in a rear surface of said casing substantially opposite said outlet aperture.
8. The device of claim 6, wherein said inlet comprises at least one aperture formed in at least one side wall of said casing.

9. The device of any preceding claim, wherein said timing means comprises an electrically operated, adjustable cam timer.
10. The device of any of claims 1 to 9, wherein said timing means comprises an electronic timer.
11. An air freshening device substantially as hereinbefore described with reference to Figures 1 to 6 of the accompanying drawings.
12. An air freshening device substantially as hereinbefore described with reference to Figures 7 and 8 of the accompanying drawings.